

**REMARKS****Claim Status**

Claims 1-11, 13-35, and 37 are pending in the application. This paper amends claims 1-3, 6-9, 11, 13-16, 18, 20-22, 24, 26-34, and 37; and cancels claims 12 and 36. Claims 1, 14, 24, and 30 are the independent claims of the instant application.

**Claim Objections**

The Office Action objected to claims 1-37 because of punctuation and grammatical errors. We respectfully submit that such errors have been corrected by the above amendments.

**Section 112 Rejections**

Claims 1-37 were rejected under 35 U.S.C. §112, second paragraph. In particular, the Office Action stated that the expressions “relatively unlikely,” “relatively likely,” and “relatively nonlocal” rendered claims 1-3, 14-16, 24, 31, and 32 indefinite. The claims have been amended by deleting these expressions.

Claims 1 and 30 were further rejected under 35 U.S.C. §112 because of “the use of *generating a hypothesized relationship about genes.*”<sup>1</sup> According to the Office Action, “since the claims do not set forth any steps involved in the methods/processes, it is unclear what methods/processes applicant is intending to encompass. A claim is indefinite where it merely recites

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<sup>1</sup> In the case of claim 30, we understand the objection to be directed to the recitation of generating a

a use without any active, positive steps delimiting how this use is actually practiced.” We respectfully traverse this rejection.

Claims 1 and 30 of the present application are unlike the claim held indefinite in *Ex parte Erlich*, 3 U.S.P.Q.2d 1011 (Bd. App. 1986), which recited a mere “use.” See MPEP §2173.05(q). To the contrary, each of the claims in issue here recites the following multiple positive steps: accessing, generating, retrieving, identifying, and sending. Prior to the above amendment, each of these claims also recited multiple positive steps, which were the steps of executing, generating, and sending. Furthermore, even if the claims recited a single step of “generating,” this fact by itself would not render them indefinite. There is no *per se* objection to claiming a single step method, unless the single step is a broad functional step falling under sixth paragraph of section 112. *See Ex Parte Kelly*, 173 U.S.P.Q. 743 (Bd. App. 1971); *Ex parte Britton*, 154 U.S.P.Q. 321 (Bd. App. 1967); *Ex parte Macy*, 132 U.S.P.Q. 545 (Bd. App. 1960).

#### Section 101 Rejections

The Office Action further rejected claims 1-37 under 35 U.S.C. §101 as directed to non-statutory subject matter. We respectfully traverse these rejections.

As regards independent method claims 1 and 30, the reasoning underlying section 101 rejection appears to be the same as the reasoning underlying the rejection of these claims under section 112. As discussed in the last paragraph under the immediately preceding subheading, claims 1 and 30 are not “use claims” such as discussed in MPEP §2173.05(q). To the contrary, each of these claims recites multiple positive steps.

As regards independent claims 14 and 24, the Office Action states that these claims “focus on *an apparatus* and *memory*, respectively, wherein the elements are recited in means plus function format.” After a general discussion of patentability of computer relating inventions, the Office Action gives the apparent reason why claims 14 and 24 were deemed to be directed to non-statutory subject matter: the “claims disclose no specific computer-readable medium, no manipulation of specific data representing physical objects or activities (pre-computer activity), nor do they disclose any specific independent physical acts being performed by the invention (post-computer activity).”

First we note that the elements of independent claims 14 and 24 are recited without the invocation of “step for” or “means for” verbiage that would trigger the presumption that the claims are written in the means-plus-function format sanctioned by the sixth paragraph of section 112. Even if the claims could be interpreted under this statutory provision, they would have to be construed in accordance with the supporting structure disclosed in the specification, and equivalents thereof. *In re Alappat*, 33 F.3d 1526, 1541 (Fed. Cir. 1994) (*en banc*); see also *In re Donaldson Co.*, 16 F.3d 1189, 1193 (Fed. Cir. 1994) (*en banc*).

Second, claims 14 and 24 are directed to apparatus and article of manufacture that, when used in a process, include “post-solution” activity. Specifically, the last clause of claim 14 recites “a communication link coupled to said memory and capable of sending information about said hypothesized relationship to said at least one agent”; the last clause of claim 24 recites instructions that include “a second software element coupled to information about said hypothesized relationship and capable of sending information about said hypothesized relationship to said at least one agent.” In other words, after a particular hypothesized relationship is determined, information about the

relationship is sent to an agent with probable interest in the relationship. This is significant post-solution activity.

Third, claims 14 and 24 recite apparatus and article of manufacture that, when used in a process, include manipulation of data representing gene expression values. As generally understood in the art, genes are physical units of heredity that are transmitted from parent to offspring and control characteristics in the offspring. Genes are not mere abstractions.

Finally, even a process that merely manipulates an abstract idea or performs a purely mathematical algorithm<sup>2</sup> falls within statutory subject matter if it is limited to a practical application of the idea or algorithm in the technological arts. MPEP §2106(IV)(B)(2)(b)(ii) (*citing Alappat*, 33 F.3d at 1543). “A claim is limited to a practical application when the method, as claimed, produces a concrete, tangible and useful result; . . . Likewise, a machine claim is statutory when the machine, as claimed, produces a concrete, tangible and useful result.” MPEP §2106(IV)(B)(2)(b)(ii) (*citing State St. Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1373 (Fed. Cir. 1998)). The machine of claim 14 sends information regarding a hypothesized relationship to an agent with a likely interest in such a relationship. The hypothesized relationship has been previously determined to have a likelihood smaller than some predetermined value of being due to chance or coincidence. Thus, the relationship is likely to correspond to some non-random fact. Sending information about a physical fact to an agent with a likely interest in such information is a concrete, tangible and useful result.

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As discussed above, the claims in issue here do not manipulate mere abstractions.

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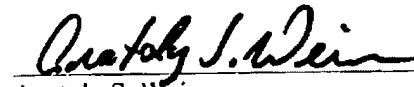
**CONCLUSION**

For the foregoing reasons, Applicants respectfully submit that all pending claims meet the requirements of 35 U.S.C. §§101 & 112. To discuss any matter pertaining to the present application, the Examiner is invited to call the undersigned attorney at (858) 720-9431.

Having made an effort to bring the application in condition for allowance, a timely notice to this effect is earnestly solicited.

Respectfully submitted,

Dated: August 30, 2004

  
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